

"Packaging for tablet-shaped objects"

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The invention relates to packaging for tablet-shaped objects, especially hygroscopic washing agent and/or detergent tablets, comprising a closed wrapping and foil bags which are arranged in the wrapping and in each of which at least one tablet is received, wherein each foil bag is closed at both ends by a respective transverse seam and in longitudinal direction by a longitudinal seam.

Washing agents and/or detergents in tablet form, which due to, for example, their hygroscopic properties need additional protection against moisture, are usually packaged in foil bags. For that purpose, for example, so-termed "flow packs", which consist of a foil sachet with a longitudinal seam and two transverse seams, called "fins", have proved themselves in practice. The production of such "flow packs" is known and is usually carried out in high-performance production plant directly after production of the tablets. Such a foil bag is known from, for example, DE 295 09 593 U1.

Tablets which are packed (single pack or multi-pack) in foil bags of that kind are usually loosely packaged in a packaging container, such as a packet, carrier packet, drum or the like, which represents in principle a sufficiently stable external packaging or wrapping for storage and transport. In that case stability refers to the required compression resistance of the unit in the case of pressure and weight loading within a palettised group.

Washing agent tablets of that kind are, however, products which are sensitive to breakage and which are usually stressed during the filling process and also during transport in such a manner that edge breakage, fracture and abrasion are not able to be avoided even with normal rigid external packaging. The tablet is not protected against this even by the foil bag, which offers only a slight additional protective effect relative to shock loading and during transport.

In principle it is known from, for example, US-A-3 774 778, DE 42 10 749 C2 or DE 40 22 120 A1 to insert foil bag packages in ordered manner into a wrapping in order to reduce the risk of displacement, during transport or similar, of the products disposed therein. It is also known, for example from DE 90 16 554 U1, DE 43 38 799 A1 or DE 43 02 909 A1, to provide wrappings with shock-absorbing inserts or special wall constructions for shock-sensitive products, which, however, makes the packaging more expensive overall.

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It is the object of the invention to improve packaging of the kind in question, while maintaining ease of manufacture thereof and lowest possible packaging cost, so that direct shock or pressure loads on the tablets are avoided.

### *Description of the Invention*

According to the invention this object is met with packaging of the kind denoted in the introduction in that the foil bags are arranged in the wrapping in ordered manner with longitudinal seams aligned parallel to one another, wherein the length of the foil bags is larger than the spacing of the side walls, which are parallel to the transverse seams of the foil bags, of the packaging in such a manner that at least one end region of the foil bags is resiliently bent over in the wrapping and that at least the side walls, which are parallel to the longitudinal seams of the foil bags, of the wrapping are equipped with wall reinforcements.

It has proved that due to the ordered arrangement of the foil bags in the wrapping, shock loads parallel to the longitudinal seam in the foil bags can be accepted relatively well at the outset, these shock loads being partly absorbed by the transversely extending fins (transverse seams) of the foil bag. Since the foil bags are in addition designed to be longer than the relevant packaging length (spacing of those side walls of the wrapping which are parallel to the transverse seams of the foil bags), one fin or both fins of the respective foil bag is or are bent over on insertion into the wrapping, so that the or each fin is disposed in the wrapping under a certain resilient stress, whereby shocks can be resiliently absorbed without occurrence of damage to the tablet-shaped products. Shock loads parallel to the longitudinal seams thus cannot lead to damage of the tablets. Shock loads in transverse direction, i.e. parallel to the transverse seams, are accepted by the special shaping of the wrapping with wall reinforcements in the appropriate side walls of the same, so that overall a packaging is provided which for low additional material cost (only certain regions with wall reinforcements and somewhat longer foil bags) offers a reliable mechanical protection, during storage and during transport, for the tablets, disposed therein. The production cost in that case is only insignificantly increased relative to known packaging of this kind, as it is only necessary to introduce the tablet-filled foil bags in ordered manner into the wrapping.

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The protection for the tablet-shaped products can be further increased in the longitudinal direction of the foil bags if the foil bags are constructed to be of such length that both end regions of the foil bags are resiliently bent over in the wrapping.

The properties of the packaging and protection for tablet-shaped products disposed therein can be even further improved if at least the side walls, which are equipped with wall reinforcements, of the wrapping are furnished with shock-absorbing inserts. These inserts can be formed from, for example, corrugated cardboard.

For protection of the packaging against pressure from above, for example when palletised, and for protection of the tablets against surface loading, advantageously it is further provided that the wrapping is constructed to be self-supporting, i.e. it is dimensioned in such a manner that the stacking of several packages one above the other does not lead to an adverse effect on the packages disposed in the lower layers.

### *BRIEF DESCRIPTION OF THE DRAWINGS*

The invention is explained in more detail in the following by way of example with reference to the drawing, in which:

Fig. 1 shows packaging according to the invention without a cover,

Fig. 2 shows, in enlarged illustration, a foil bag with two tablets disposed therein and

Fig. 3 shows a cross-section through the packaging according to Fig. 1.

Packaging according to the invention for tablet-shaped objects, especially hygroscopic washing agent and/or detergent tablets, is denoted in the drawing generally by 1. It comprises a closed wrapping 2 and a plurality of foil bags 3, one of which is illustrated in more detail in Figure 2.

Such a foil bag 3 is formed from a foil hose and is closed at both ends by respective transverse seams or transverse fins 4. The foil bag 3 is closed in longitudinal direction by a longitudinal seam 5. Before closing, washing agent tablets 6, for example, are introduced into such a foil bag 3, two washing agent tablets 6 being received in a foil bag 3 in the illustrated embodiment.

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According to the invention the foil bags 3 are, as can be recognised from Figure 1, arranged in the wrapping 2 to be ordered with longitudinal seams 5 aligned parallel to one another. The wrapping 2 itself comprises two first side walls 2a, which are arranged parallel to the longitudinal seams 5 of the foil bags 3, and two second side walls 2b, which are arranged at right angles thereto. The two side walls 2a, which are arranged parallel to the longitudinal seams 5 of the foil bags 3, are equipped with wall reinforcements. In addition, these side walls 2a can be furnished at the inside with shock-absorbing inserts 7, for example of corrugated cardboard, which are appropriately inserted into the wrapping 2.

If pressure is exerted on the wrapping 1 in the direction of the arrow characterised by A, thus parallel to the longitudinal seam 5 of the foil bags, then such a loading is accepted by the transverse seams 4 of the foil bag 3 without adversely affecting the tablets 6. If, thereagainst, the packaging 1 is loaded in transverse direction, namely in the direction of the arrow B, then this loading is accepted by the wall reinforcements of the side walls 2a and additionally by the inserts 7, so that pressure loadings on the lateral weak points of the foil bags 3 and thus the tablets 6 are avoided.

The wrapping 2 can, moreover, also be constructed to be self-supporting so as to enable a risk-free stacking of several wrappings one on the other.

The wall reinforcement in the side walls 2a of the wrapping, which in the simplest manner can be achieved by double walling of the wrapping in this region, additionally increases the compression resistance of the entire packaging 1 during transport and storage in a palette. Altogether, there is provided packaging 1 for tablets 6 which offers an all-round protection for the fracture-sensitive tablets 6 within the packaging 1.

As evident best from Figure 3, the length of the foil bag 3 is selected so that it is larger than the spacing of the side walls 2b, which are parallel to the transverse seams 4 of the foil bag 3, of the wrapping 2. This has the consequence that the two end regions designated by 8 of the foil bag 3, which have the transverse seams 4, come to lie resiliently bent over in the wrapping 2. The foil bags 3 thus lie under a certain "spring loading" in the wrapping 2 and can cushion, for example, shocks without damage to the tablets 6, because they can move to a certain extent in the wrapping 2 in the direction of the double arrow 9.

As recognisable from Figure 3, the following geometric dimensions result:

$$c \geq 0$$

$$a > 0$$

$$a < 1,$$

wherein  $c$  represents the spacing of the two tablets 6 arranged adjacent to one another in a foil bag 3,  $a$  represents the spacing between the outer edge of a tablet 6 and the associated side wall 2b of the wrapping 2, and 1 represents the overall fin length of the foil bag 3 or the length of the foil bag 3 from the outer side of a tablet 6 up to the free end.

The invention is obviously not restricted to the illustrated embodiment. Further refinements are possible without departing from the basic concept. Thus obviously several superimposed layers of foil bags 3 filled with tablets 6 can be arranged in the wrapping 2, wherein the stack pattern of all layers is naturally the same in order to ensure the requisite ordered arrangement of the foil bags 3 in the wrapping 2. Moreover, the packaging 1 is obviously closable at the top, but cover flaps or the like are not illustrated in the drawing for reasons of clarity.

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